



# ADXL50/ADXL05 Evaluation Modules

## ADXL50EM-1, ADXL05EM-1/EM-3

### FEATURES

High Performance Prepackaged Accelerometers  
Complete Acceleration Measurement System  
Single and Multiaxis Versions  
Small, Low Cost, Ready-to-Use  
Available in  $\pm 4\text{ g}$  or  $\pm 25\text{ g}$  Full-Scale Ranges  
See ADXL150EM Data Sheet for  $\pm 10\text{ g}$  Modules  
+5 V Single Supply Operation  
Reliable Industrial Packaging With Screw-Down Mounting

### APPLICATIONS

Vibration Analysis, Tilt Sensing, Position and Motion,  
Inertial Guidance, Virtual Reality Systems, Seismic and  
Earthquake Monitoring, Crash Sensing, Robotic Appli-  
cations, Shipping and Transportation Shock Monitor-  
ing, Active Suspension Applications, Medical Analysis,  
Active Sound Cancellation, and Much More

### DESCRIPTION

The ADXLEM Series of evaluation modules provides a complete acceleration measurement system in a low cost package. The modules simplify the evaluation and testing of our ADXL50 and ADXL05 monolithic accelerometer ICs. Each module contains one or more accelerometers precalibrated to a convenient output scale factor with onboard low-pass filtering.

All that is required to use these modules is a +5 volt power supply. The module should be attached (i.e., screwed or glued

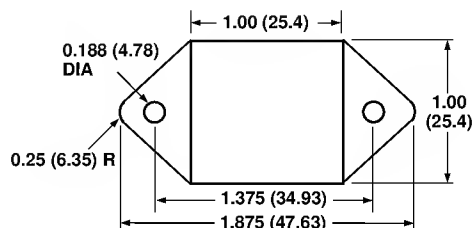
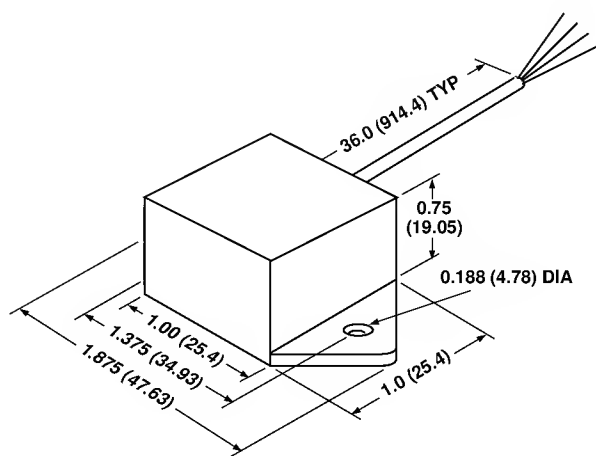


down) securely to the object being measured, taking care that the axis of sensitivity, indicated by the large arrow on the top of the module, is aligned with the expected acceleration.

Modules are available in other package styles (such as ruggedized metallic box) and in other g ranges from NGT Technology, 3 Cross Road, LaGrangeville, NY 12540-5705, 914-223-3359, and from Crossbow Technology, 2880 North 1st Street, San Jose, CA 95134, 408-428-6204.

### OUTLINE DIMENSIONS

Dimensions shown in inches and (mm).



### CABLE SIGNAL COLOR CODE

| FUNCTION   | COLOR  | MODEL     |
|------------|--------|-----------|
| +5VDC      | RED    |           |
| COM RTN    | BLACK  |           |
| A1 (X) OUT | WHITE  | UNI-AXIAL |
| A2 (Y) OUT | YELLOW | BI-AXIAL  |
| A3 (Z) OUT | GREEN  | TRI-AXIAL |

### REV. A

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# ADXL50EM-1, ADXL05EM-1/EM-3—SPECIFICATIONS

## ACCELEROMETER EVALUATION MODULES

| Model                  | ADXL50<br>EM-1<br>Single Axis | ADXL05<br>EM-1<br>Single Axis | ADXL05<br>EM-3<br>Tri-Axial | Units        | Remarks        |
|------------------------|-------------------------------|-------------------------------|-----------------------------|--------------|----------------|
| Span                   | ±25                           | ±4                            | ±4                          | <i>g</i>     | ±5%            |
| Sensitivity            | 80                            | 500                           | 500                         | mV/ <i>g</i> | ±5%            |
| Bandwidth              | DC–400 Hz                     | DC–100 Hz                     | DC–100 Hz                   | Hz           | ±5%            |
| Noise                  | 130 mg                        | 5 mg                          | 5 mg                        | mg rms       | Typical        |
| Orientation            | Horizontal                    | Horizontal                    | Triaxial                    |              |                |
| Zero <i>g</i> Output   | +2.5 ± 0.1                    | +2.5 ± 0.1                    | +2.5 ± 0.1                  | Volts        | @ +25°C        |
| Zero <i>g</i> Drift    | ±60                           | ±60                           | ±60                         | mV           | 0°C to 70°C    |
|                        | ±0.75                         | ±0.12                         | ±0.12                       | <i>g</i>     | 0°C to 70°C    |
|                        | ±145                          | ±100                          | ±100                        | mV           | –40°C to +85°C |
|                        | ±1.8                          | ±0.2                          | ±0.2                        | <i>g</i>     | –40°C to +85°C |
| Span Output            | ±2.0 ± 0.1                    | ±2.0 ± 0.1                    | ±2.0 ± 0.1                  | Volts        | @ +25°C        |
| Nonlinearity           | ±0.2                          | ±0.2                          | ±0.2                        | % FS         | Typical        |
| Alignment              | ±2                            | ±2                            | ±2                          | Degrees      | Typical        |
| Transverse Sensitivity | ±3.5                          | ±3.5                          | ±3.5                        | % FS         | Typical        |
| Temperature Range      | –40 to +85                    | –40 to +85                    | –40 to +85                  | °C           |                |
| Shock                  | 500                           | 500                           | 500                         | <i>g</i>     | Powered        |
|                        | 2000                          | 1000                          | 1000                        | <i>g</i>     | Unpowered      |
| Output Loading         | >10 kΩ < 1 nF                 | >10 kΩ < 1 nF                 | >10 kΩ < 1 nF               |              | Max            |
| Supply Voltage         | +5 ± 0.25                     | +5 ± 0.25                     | +5 ± 0.25                   | Volts        | Max            |
| Supply Current         | 10                            | 8                             | 24                          | mA           | Typical        |

### NOTES

<sup>1</sup>All frequency break points are –3 dB, single pole, –6 dB per octave roll-off.

<sup>2</sup>Nonlinearity is the deviation from a best fit straight line at full scale.

<sup>3</sup>Transverse sensitivity is error measured in the primary axis output created by forces induced in the orthogonal axis.

<sup>4</sup>Zero *g* Drift is specified as the typical change in 0 *g* level from its initial value at +25°C to its worst case value at T<sub>MIN</sub> or T<sub>MAX</sub>.

<sup>5</sup>Consult factory for availability of higher bandwidth version of ADXL05EM modules.

<sup>6</sup>Transverse sensitivity error is primarily due to the effects of misalignment (i.e., much of it can be tuned out by adjusting the package orientation).

Specifications subject to change without notice.

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